MODERATING ROLE OF FINTECH ON BUDGETARY CONTROL AND FINANCIAL PERFORMANCE OF NIGER STATE GOVERNMENT REVENUE GENERATING INSTITUTIONS

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Abstract

This study attempts to investigate the moderating role of Fintech on budgetary control and financial performance of Niger state government revenue-generating institutions**.** The study engaged quantitative, survey, and explanatory research strategies to achieve the study objectives. The study's population comprises 6,064 staff members from ten revenue-generating institutions in Niger State. The study uses purposive random sampling technique to select 381 sample size as indicated by Krejcie and Morgan's sample size determination table. The study uses partial least squares structural equation modeling (PLS-SEM) for data analysis. the study findings reveal that Budget Funding has a significant positive effect on financial performance. Additionally, it was found that FinTech significantly moderates the relationship between Budget Funding and Financial Performance, However, FinTech did not moderate the relationship between Budget Monitoring and Evaluation and Financial Performance. The study recommends that policy makers, revenue-generating institutions, and financial managers invest in and adopt advanced FinTech solutions.

Keywords: Financial Technology, Budget Funding, Budget Monitoring and Evaluation,

Financial Performance

Introduction

Effective financial performance of revenue-generating institutions is critical for the government to meet its fiscal objectives and provide essential services to its citizens. It refers to the measure of how well an organization or entity is using its resources to generate revenue, manage expenses, and achieve profitability. Brooks (2022) emphasizes the importance of managing financial resources effectively to ensure the successful operation and sustainability of institutions. In the rapidly evolving global service delivery landscape, various revenue-

generating institutions are fundamental in funding developmental projects and public services. These institutions must prioritize efficient use of funds, minimize waste, and promote value for taxpayers' money. Achieving sound financial performance entails not only meeting budgetary targets and minimizing deficits but also optimizing resource allocation to support the government's broader economic and social objectives.

Institutions aiming for robust financial performance must adopt strategies that enhance their capacity to generate and manage revenue effectively. This involves implementing comprehensive budgetary controls, stringent financial oversight, and leveraging innovative financial technologies. By doing so, they can ensure greater transparency, accountability, and efficiency in their financial operations. Furthermore, sound financial performance supports the sustainability of revenue-generating activities, allowing for continuous funding of essential public services such as healthcare, education, and infrastructure development. Ultimately, the effective financial performance of these institutions strengthens the government's ability to meet its fiscal responsibilities, foster economic growth, and improve the quality of life for its citizens.

Financial technology (FinTech) revolutionizes financial management for businesses and governments by leveraging advanced technologies to enhance the efficiency and effectiveness of financial services (Hermuningsih et al., 2023). Innovations such as digital payments, blockchain, and data analytics have the potential to streamline processes, improve transparency, and reduce costs significantly (Theiri & Hadoussa, 2023). For example, digital payment systems facilitate quicker and more secure transactions, reducing the time and resources required for processing traditional paper-based transactions. Blockchain technology offers a decentralized and immutable ledger that can enhance the accuracy and security of financial records, while data analytics can provide valuable insights into financial trends and performance, enabling more informed decision-making.

Focusing on Niger State, this study will offer valuable, context-specific insights into the unique challenges and opportunities that fintech presents within the region. Such insights are crucial for local policymakers and financial managers as they develop targeted strategies to leverage fintech effectively for enhancing budgetary control and improving financial outcomes. Additionally, the study will provide actionable recommendations for the implementation and management of fintech solutions in public sector financial management. It will include guidelines for optimizing fintech tools to strengthen budgetary control mechanisms and boost overall financial performance. For instance, automated budgeting software can assist in real-time tracking and adjustment of financial plans, ensuring that expenditures remain within allocated budgets. Additionally, predictive analytics can help identify potential financial issues before they arise, allowing for proactive management.

High-level financial performance in an organization enhances its solvency status, reduces debt burden, and ensures successful execution of capital projects. This necessitates the formation of budget monitoring committees to evaluate performance. Proper budgetary control can mitigate budget deficits and the need for supplementary budgets. Effective financial performance in governmental institutions translates to efficient service delivery, sound policy decisions, optimal resource allocation, and the maintenance of solvency, fostering continuous improvement. Despite existing budgetary control systems, governmental budgets often fall into deficits due to cash crunches that prevent the release of allocated funds.

Budgetary control lapses, including issues with planning, participation, funding, monitoring, evaluation, corruption, accounting systems, timeliness, and flexibility, have hindered government functionality in service delivery. These lapses impact financial performance differently in profit-making and non-profit organizations. A recent study by Panyako and Miroga (2024) investigated the impact of the budgeting process on the financial health of the County Government of Trans Nzoia using regression analysis and findings

revealed a moderately positive correlation between budgearyt control and auditing practices, and the financial performance of the county government. Similarly, a moderately positive relationship was observed between budget monitoring and evaluation procedures, and the government's financial well-being.Also, Tirtosudarmo, Wardoyo, and Kuncoro. (2022) used structural equation modeling to test the relationship between budgetary control and financial performance. And found a positive relationship between budgetary control and financial performance.

Olaoye & Alabadan, (2024) used regression analysis to examine the Effect of Debt Burden on Public Revenue and Budget Performance in Nigeria and studied Nigeria's rising debt (2015-2022) and its impact on public finances and development goals. It analyzes how debt affects budget allocation, macroeconomic stability, and spending in key sectors like health and education and findings revealed significant debt increase, exceeding recommended levels and hindering development plans.

Ezekiel and Obafemi, (2022) used descriptive correlation analyses to study the Influence of budget and financial control in selected government parastatals in Nigeria, and findings show that budget monitoring, and evaluation have insignificant positive impact on the financial control of government parastatals in Nigeria. Nonetheless, the study variables did not include Budget Funding, a major budgetary control driver. There is a scarcity of literature exploring FinTech as a moderating variable in the relationship between budgetary control and financial performance. Existing research demonstrates a generally positive correlation between budgetary control and financial performance, although findings vary across studies. While Panyako and Miroga (2024) and Tirtosudarmo et al. (2022) report direct positive links, Olaoye and Alabadan (2024) highlight the complex interplay between debt burden and budgetary control. These inconsistencies underscore the need for further investigation, particularly regarding the role of Fintech as a potential moderator.

The aim of this study is to explore the moderating role of Financial Technology (Fintech) on the relationship between budgetary control and the financial performance of revenue-generating institutions in Niger State. The specific objectives are as follows:

i. To analyze the effect of budget funding on financial performance of revenue-generating institutions in Niger State.
ii. To investigate the effect of budget monitoring and evaluation, on financial performance of revenue-generating institutions in Niger State.
iii. To determine the impact of Fintech on the financial performance of revenue-generating institutions in Niger State.
iv. To evaluate the moderating effect of Fintech on the relationship between budget funding and financial performance in revenue-generating institutions in Niger State.
v. To assess the moderating role of Fintech on the relationship between budget monitoring and evaluation, and financial performance in revenue-generating institutions in Niger State.

Literature Review

Financial Performance

Financial performance is defined in various ways by different scholars, but the core concept remains consistent. Johnson and Martinez (2023) describe it as an organization's ability to generate profits and create value for shareholders through efficient financial management. Similarly, Pandey (2020) views financial performance as the ability to generate revenue, manage expenses, and achieve profitability and growth over time. Brigham and Ehrhardt (2022) echo this, emphasizing the importance of maintaining financial stability and liquidity while creating shareholder value.

The ability of an organization to create shareholder value through efficient performance use of financial resources is also highlighted by Ittner and Larcker (2021). Ross, Westerfield, Jordan, and Robert (2022) define financial performance as achieving financial goals and objectives, as reflected in financial statements and other performance metrics. According to Kaufmann et al. (2007, as cited in Zarei, Yazdifar, Ghaleno, & Namazi, 2021), budget compliance and achieving service delivery are critical determinants of financial, emphasizing the importance of organizational strategies, policy implementation, and independence from political pressures. Karimi and Makokha (2021) noted that effective financial management leads to economic achievements and better institutional performance. to ensure financial stability, an organization's financial performance is a critical indicator of its overall health. It shows how well the organization is managing its resources to achieve both short-term and long-term goals. Strong financial performance demonstrates the organization's ability to sustain operations, invest in growth opportunities, and provide returns to stakeholders. Conversely, weak financial performance may highlight potential financial risks or the need for strategic changes.

Financial Technology

Financial technology, commonly known as fintech, has revolutionized the financial industry by transforming how financial transactions are conducted. The origins of fintech date back to the late 19th century with the use of the telegraph and Morse code for financial communications. Fintech is a blend of 'financial' and 'technology,' encompassing a range of applications, software, and technological solutions that enable individuals and enterprises to manage, analyze, and execute financial transactions electronically. According to Bazarbash, Griffin, and Una, (2023) fintech includes software and mobile applications that simplify financial transactions for consumers and businesses by leveraging the latest technologies to enhance and automate conventional financial processes.

Financial technology, commonly referred to as Fintech, represents a dynamic and transformative force in the financial industry. It encompasses a broad range of innovations that leverage digital tools and platforms to enhance, automate, and disrupt traditional financial services. Fintech is not merely an add-on to existing financial systems; it is fundamentally reshaping how financial activities are conducted, including payments, lending, investment, and financial planning. By integrating advanced technologies such as artificial intelligence, blockchain, and big data analytics, Fintech is driving greater efficiency, accessibility, and personalization in financial services, challenging established financial institutions and creating new opportunities for consumers and businesses alike (Bhattacharjee, Srivastava, Mishra, Adhav, & Singh.(2024)).

Fintech is an overarching term that covers a wide array of finance-related technologies, spanning from traditional banking to capital markets, including investment firms, hedge funds, and credit card companies. The industry encompasses various aspects such as payment systems, banking tools, online lending, insurance marketplaces, and software used within the financial sector. As noted by Feyen, Frost, Gambacorta, Natarajan, and Saal (2021), fintech's scope is broad, impacting numerous financial services and processes. The rapidly growing fintech industry offers companies opportunities to improve productivity, reduce costs, drive innovation, and manage risks effectively.

Budgetary Control

Budgetary control is an essential management function that involves the creation, monitoring, and adjustment of budgets to ensure that an organization's financial activities align with its strategic goals. It encompasses the establishment of budgets and the continuous comparison of actual outcomes with budgeted expectations. This comparison allows

organizations to identify variances and implement corrective actions to maintain financial discipline (Parihar, 2023). By ensuring that financial resources are allocated efficiently, budgetary control supports better decision-making, enhances operational efficiency, and aligns expenditures with organizational priorities (Ishimwe and Abuga, 2024). Additionally, budgetary control promotes accountability and transparency within organizations, as it requires regular reporting and assessment of financial performance against predetermined targets (Halwindi and Mwanza, 2022). Ultimately, effective budgetary control enables organizations to anticipate financial challenges, optimize resource utilization, and achieve long-term sustainability (Adamu, 2023).

Budgetary control is a financial management process that involves planning, coordinating, and controlling an organization's budget to ensure targets are achieved within a specified period. It aims to utilize financial resources efficiently and effectively through cost management, creation of budget plans, departmental coordination, and assignment of responsibilities. The process includes comparing actual performance to budgeted figures and taking actions to optimize profitability. Budgetary control involves developing and implementing a budget plan that specifies financial goals and objectives, allocating resources accordingly, and maintaining financial discipline by monitoring actual performance against budgeted targets, identifying variances, and taking corrective actions as needed. This requires regular review and analysis of financial data to identify areas for reducing expenses, increasing revenues, or better allocating resources.

Dimensions of Budgetary Control

i. *Budget monitoring and evaluation* - Budget monitoring and evaluation are critical processes for ensuring the effective and efficient execution of a budget plan. Budget monitoring involves tracking actual spending and comparing it with the planned budget to identify deviations or variances. This allows for timely detection of problems and corrective actions, such as adjusting spending, reallocating resources, or revising the budget plan. Budget evaluation, in contrast, assesses the overall performance of the budget plan and its impact on the organization's goals and objectives. This involves analyzing both financial and non-financial data to evaluate the effectiveness and efficiency of the budget plan and identify areas for improvement (Ngacha & McDonald, 2023).

ii. *Budget Funding* - The release of budget funds is crucial to an organization's financial performance, involving the distribution of allocated budgetary resources to various departments or projects to support their operations. Gao, Chen, and Sun (2021) highlight that timely and appropriate releases of budget funds can significantly improve cash flow, increase operational efficiency, and enhance financial stability. Effective budgetary control is emphasized by Feng and Qiao (2020), who argue that it ensures funds are released only for approved purposes, thereby helping organizations monitor spending and prevent financial mismanagement. Moreover, the International Monetary Fund (2021) underscores the importance of effective budget execution in ensuring that budget funds are released timely and efficiently, contributing to overall financial performance. This execution process is critical for maintaining the financial health and operational effectiveness of an organization.

Empirical Review

Simanjuntak, Pangaribuan, and Siagian (2024) explored the impact of financial performance on budget planning and control in non-profit organizations. The study employed a quantitative research approach, utilizing statistical methods to analyze the relationships among the variables. The researchers surveyed 16 non-profit organizations in Indonesia, selected through purposive sampling to gather primary data. Simple regression analysis was used to assess the influence of financial performance on budget planning and control, with the

data being processed using SPSS version 22. The results indicated a positive correlation between the financial performance of non-profit entities and their budget planning and control practices.

Ishimwe and Abuga, (2024) examined the effect of budgetary control measures on the financial performance of the county government of Kajiado. The study's objectives are to: - assess the effect of budget planning, evaluate the effect of budget coordination and determine the effect of budget evaluation on financial performance of the county government of Kajiado. This study was anchored on the allocation of resource theory, expenditure theory and progressive theory of public expenditures. The study used a descriptive research design. The target population of the study were the 4,017 employees in Kajiado county government in all the four departments. The study employed stratified random sampling, to categorize the population into strata. To get the number of employees per department, the study used the sample proportionate to population technique. Then, the study used simple random sampling to select the employees. The study used the Yamane (1973) formula to arrive at the sample size of 363 respondents. Data was collected through questionnaires. Findings revealed that budget planning positively and significantly influence financial performance of the county government of Kajiado It was noted that budget coordination and evaluation positively and significantly influence financial performance of the county government of Kajiado.

Ngacha and McDonald (2023) examined the effect of Monitoring and evaluation of budgetary practices on project service delivery in Cameroon Baptist Convention Health Services. The study used mixed research designs (quantitative and qualitative). The study population was 140 respondents with a sample size of 103 respondents using Fisher's exact formula and purposive sampling technique. The study used correlation and multiple regression to analyzed the study data using SPSS. The study found a significant positive relationship between Monitoring and evaluation practice (project service delivery) and financial performance.

Kaithia, Moguche, and Rintari, (2024) conducted a study to determine the impact of budget planning on the financial performance of public universities in the Mount Kenya region, Kenya. The research employed a descriptive design, targeting seven universities in the region. The respondents included 284 heads of departments from both academic and administrative divisions, selected through a census method The data were analyzed using descriptive techniques such as frequencies, percentages, and means, as well as inferential statistics like correlations. A pre-test was conducted at Laikipia University, where 28 respondents were selected using a simple random method. The findings, presented in tables and explanations, revealed a significant and positive correlation between budget planning and the financial performance of public universities.

Parihar, (2024) conducted a study to assess the impact of budgetary control on financial performance at Vaishno Enterprise Satna. The research employed a descriptive survey design, utilizing structured questionnaires distributed to 25 respondents from the Accounts, Finance, and Administration Departments. Data collection was carried out using well-structured questionnaires, and respondents were selected through simple random sampling. The data were analyzed using frequency percentages and chi-square tests. The study's findings indicated that budgets and budgetary controls significantly influence organizational performance due to their strong interrelationship.

Ibrahim, Ahmad, and Bakar (2021) examined Budgetary Control and Financial Performance: Evidence from Malaysia. The study aimed to investigate the relationship between budgetary control and financial performance in Malaysian organizations as well as examine how budgetary control practices influence financial performance. The study used secondary data from the financial statements of 100 Malaysian companies. They employed regression analysis to examine the relationship between budgetary control and financial performance, and

found a positive correlation. The relationship was stronger for smaller companies compared to larger ones. The study acknowledged limitations such as reliance on secondary data, which may lack the detail provided by primary data, and the relatively small sample size.

Tirtosudarmo, Wardoyo, and Kuncoro (2022) investigated The Effect of Budgetary Control on Financial Performance: Evidence from Indonesia. They collected data from 150 Indonesian companies using survey questionnaires and analyzed it with structural equation modeling to assess the relationship between budgetary control and financial performance. The study confirmed a positive relationship, noting that it was moderated by organizational culture and employee motivation.

Ezekiel and Obafemi (2022) investigated the impact of budget and financial control in selected government parastatals in Nigeria. The study used survey research design and collected primary data using questionnaire. The study focused on all government parastatals in Ekiti State, with a purposive sampling technique used to select 300 staff members. The independent variables included budget planning, preparation, implementation, and monitoring and evaluation, while financial control was the dependent variable. Descriptive correlation analysis revealed that budget preparation had an insignificant positive impact on financial control, and similarly, budget implementation, monitoring, and evaluation had a minimal positive impact.

Moses (2022) examined budgeting and financial performance in public hospitals in Uganda, using a sample of 52 out of 60 hospital staff selected through the Neuman formula. Employing both quantitative and qualitative research methods, the study utilized descriptive and multiple regression analyses to establish a significant relationship between budgeting and financial performance.

Ali (2022) researched the impact of the budgeting process in selected firms in Mogadishu, Somalia. The study aimed to assess the influence of formalized budget participation on organizational performance, using a population of 23 remittance companies in Mogadishu. A judgmental sampling technique was employed, and data was analyzed using descriptive statistics, including frequency, mean, standard deviation, and correlation analysis. The study found a significant improvement in effectiveness with enhanced budget planning and a positive correlation between budgetary participation and organizational performance.

Theoretical Framework

Allocation of Resources Theory

The Allocation of Resources Theory is used as the study underpinning theory. The theory was proposed by Bower, Joseph in 1970, the Allocation of Resources Theory posits that resources are limited and must be judiciously allocated to various functions, with storage being a notable exception. The ability to secure and manage funds is crucial for an organization's success and goal attainment (Gizachaw, 2018 as cited in Osore, 2019). This theory provides a framework for understanding how resources are distributed within an organization or society, focusing on how different individuals and groups vie for and gain access to resources, thereby impacting their capacity to achieve their objectives. Economist Amartya Sen's Capability Approach is a key reference for this theory, emphasizing that access to essential resources should empower individuals to achieve their goals without being hindered by external factors like social inequality.

Sociologist Pierre Bourdieu's concept of cultural capital also contributes significantly to the Allocation of Resources Theory. Bourdieu's theory highlights how cultural knowledge and social status can influence access to valuable resources such as employment, wealth, and political influence. Those with higher cultural capital—such as advanced education, credentials, and robust social networks—are better positioned to secure these resources. The theory of resource allocation is especially pertinent to the budgetary control and financial

performance of ministries and parastatals. It underlines the process of distributing limited financial resources among various departments or programs to meet organizational goals efficiently.

In the context of ministries, budgetary control involves setting budgets, monitoring expenditures, and implementing corrective measures to prevent overspending. Resource allocation theory offers a framework for optimizing the distribution of financial resources to meet the ministry's objectives within the given budget. Additionally, financial performance, assessed through ratios like return on investment, liquidity, and profitability, reflects the effectiveness of financial management practices. The theory provides a basis for evaluating how well ministries manage their resources to achieve their goals, emphasizing the importance of effective resource allocation in maintaining financial discipline and achieving organizational success.

Methodology

The study used quantitative, survey, and explanatory research designs. The study's population comprises 6,064 staff members from ten revenue-generating institutions in Niger State, including ministries such as Finance, Justice, and Health, as well as the Niger State Internal Revenue Service. The sample size was determined to be 381 employees, selected using Krejcie and Morgan's sample size determination table. A purposive random sampling technique was used to ensure representative sampling. Data was collected through a structured questionnaire divided into two sections: respondent bio-data and study variables, using a 5-point Likert scale. The study used partial least squares structural equation modeling (PLS-SEM) for data analysis.

Data analysis

Measurement (outer) Model

Before conducting the evaluation of the study's measurement model, a Confirmatory Factor Analysis (CFA) was performed to assess the factor loadings of the constructs. The study includes four constructs: Financial Technology (FT), Budget Funding (BF), Budget Monitoring and Evaluation (BME), and Financial Performance (FP). Each of these constructs is measured by five items, except for Financial Performance, which is measured by eight items. The results of the CFA revealed that one of the factor loadings, specifically BME5, was below the required threshold of 0.50 for the study. Consequently, the item BME5 was deleted from the model.

Figure 1 presents the study's path diagram, illustrating the retained scale items.

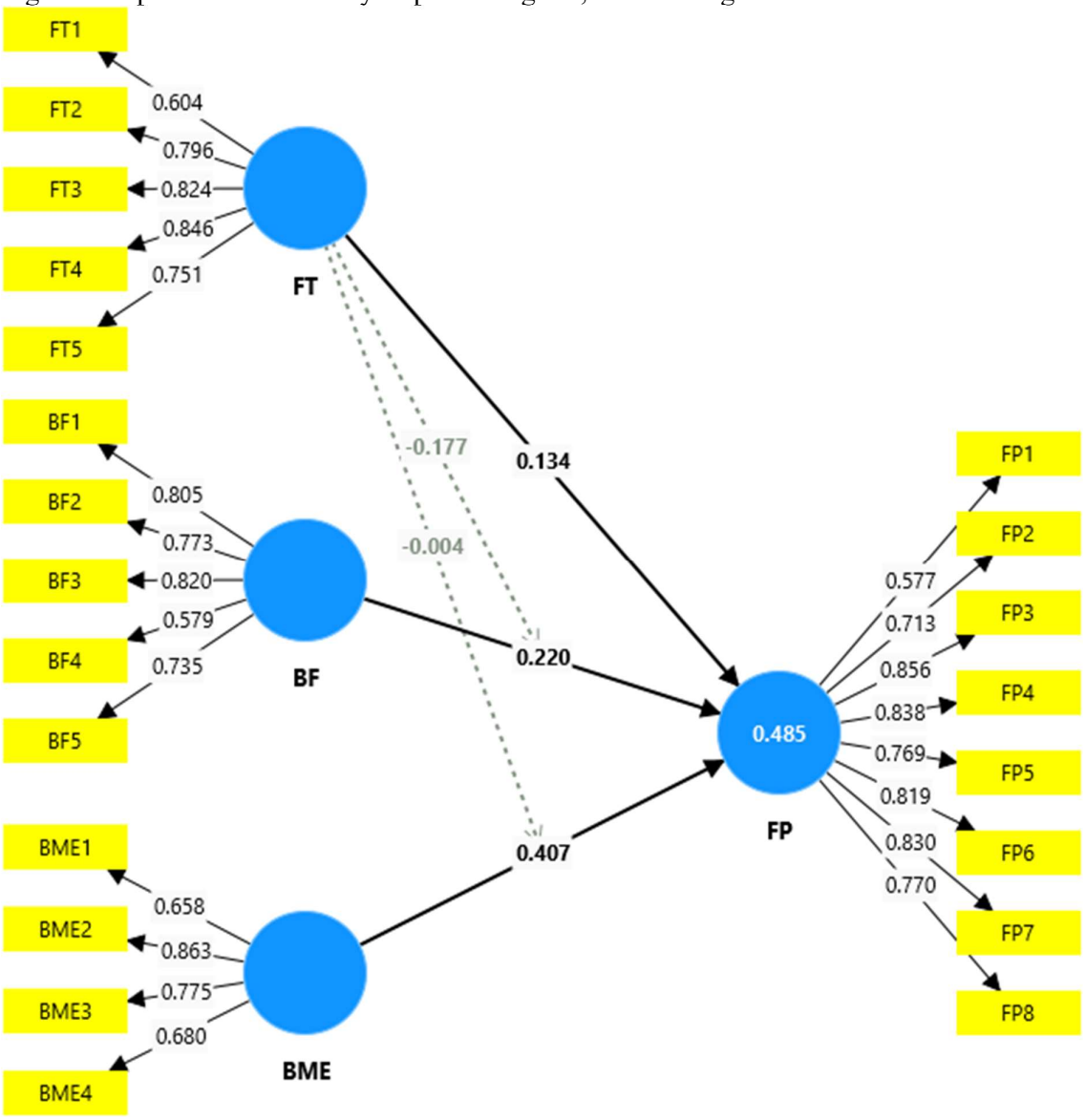

Figure 1: Path Diagram

Model Fit Indices

After runnig the CFA, the study checked how the model fit the data. Table 1 shows the indices used to assess the study model fit.

Table 1 **Model Fit**

	Saturated model	Estimated model
SRMR	0.081	0.080
d_ULS	1.653	1.636
d_G	0.522	0.522
Chi-square	1019.942	1015.214
NFI	0.758	0.759

The model fit results of PLS-SEM are still a work in progress. Scholars recommend caution when drawing conclusions from PLS-SEM model fit indices. The SRMR (Standardized Root Mean Square Residual) in Table 1 measures the average difference between observed and predicted correlations in the model, with an SRMR value of 0.081 indicating a good fit, as values closer to zero are preferred (Hair et al., 2017). The NFI (Normed Fit Index) measures the proportion of variance in the observed data accounted for by the model, with an NFI value of 0.758 indicating a fair fit (Dash & Paul, 2021). According to Ringle, Christian, Wende, Sven, & Jan-Michael (2022), NFI values range between 0 and 1, with values closer to 1 indicating a better fit.

Reliability and Convergent Validity Test

The first measurement test evaluation carried out is the reliability and convergent validity test. For a construct to be considered reliable, the values of the construct Cronbach's alpha (CA) and composite reliability (CR) should be > .7 threshold. The study used the Fornell and Larcker criterion to conduct convergent validity test. For any construct to be considered to have achieved convergent validity, the construct factor loading and Average Variance Extracted (AVE) should be > .50, and the CR value should be > .70 (Fornell & Larcker, 1981).

Table 2. Reliability and Convergent Validity Test

Variables	Cronbach's Alpha (CA)	Composite Reliability (CR)	Average Variance Extracted (AVE)
BF	0.797	0.862	0.559
BME	0.733	0.834	0.560
FP	0.903	0.923	0.603
FT	0.824	0.877	0.592

The results of the reliability and convergent validity tests, as presented in Table 2, revealed that all the constructs achieved the required thresholds for Cronbach's Alpha (CA) and Composite Reliability (CR) values, both exceeding 0.70. Specifically, the CA and CR values for the constructs ranged between 0.733 and 0.923 across the two reliability test methods employed. Additionally, the factor loadings and Average Variance Extracted (AVE) values for each construct were all above the established thresholds, indicating strong reliability and convergent validity for the measurement model. This suggests that the items used to measure each construct are both consistent and accurately represent the underlying theoretical concepts.

Discriminant Validity Test

This study employed two approaches to assess discriminant validity: the Fornell and Larcker criteria and the Heterotrait-Monotrait Ratio (HTMT) criteria. The Fornell and Larcker criteria involve comparing the square root of the Average Variance Extracted (AVE) for each construct with the correlations between the construct and other constructs in the model, ensuring that the AVE square root is greater than the inter-construct correlations. The HTMT criteria, on the other hand, involve evaluating the ratio of between-trait correlations to within-trait correlations, with values below 0.90 generally indicating adequate discriminant validity. By applying both methods, the study ensures a robust assessment of discriminant validity, confirming that the constructs are distinct and not overly correlated with each other.

Discriminant Validity – Fornell and Larcker Criteria

The Fornell and Larcker criteria require that the square root of the Average Variance Extracted (AVE) for each construct must be greater than its correlations with any other

construct in the model. This ensures that the constructs share more variance with their own indicators than with other constructs, thus confirming discriminant validity. The results presented in Table 3 demonstrate that all study constructs meet this requirement, as the square roots of the AVE values for each construct are indeed greater than the corresponding inter-construct correlations. This indicates that each construct is distinct from the others, fulfilling the Fornell and Larcker criteria for discriminant validity and reinforcing the robustness of the measurement model.

Table 3. Fornell and Larcker Criterion

	BF	BME	FP	FT
BF	0.748			
BME	0.402	0.749		
FP	0.466	0.612	0.776	
FT	0.461	0.559	0.509	0.769

Discriminant Validity – HTMT Criteria

The Heterotrait-Monotrait (HTMT) ratio is based on the assumption that the combined variances of all constructs in the model should not exceed their individual variances. To ensure adequate discriminant validity, the HTMT values must be below the threshold of 0.90. In Table 4, the HTMT values for all constructs in the study are below this threshold, indicating that the constructs are sufficiently distinct from one another. This adherence to the HTMT criterion confirms that the study possesses adequate discriminant validity, as suggested by Henseler et al. (2015). Consequently, the constructs in the study do not exhibit excessive overlap, reinforcing the reliability of the measurement model.

Table 4 Discriminant Validity – HTMT Criterion

	BF	BME	FP	FT	FT x BF	FT x BME
BF						
BME	0.528					
FP	0.541	0.750				
FT	0.566	0.716	0.585			
FT x BF	0.129	0.238	0.351	0.260		
FT x BME	0.170	0.479	0.370	0.494	0.458	

EVALUATION OF STRUCTURAL (INNER) MODEL

Collinearity Problem

After conducting several tests on the measurement model, we proceeded to the first step of the structural model analysis. To ensure that the regression results were unbiased, we examined the potential issue of collinearity among the constructs. This was done using the Variance Inflation Factor (VIF), where a VIF value greater than 5 would indicate problematic collinearity. However, as shown in Table 5, all construct items had VIF values ranging between 1.268 and 1.791, which are well below the threshold of 5. These results confirm that collinearity is not a concern in our study, allowing us to proceed confidently with the regression analysis in the structural model.

Table 5. Collinearity Test

	VIF
BF -> FP	1.339
BME -> FP	1.600

FT -> FP	1.791
FT x BF -> FP	1.268
FT x BME -> FP	1.594

Coefficient of determination R^2

The R-square (R^2) value indicates the extent to which the exogenous variables influence the endogenous variable in a model. It essentially measures the proportion of variance in the endogenous variable that is predictable from the exogenous variables. The interpretation of the R^2 value relies on specific cutoff thresholds, which serve as a rule of thumb. According to Chen, as cited in Fauzi (2022), an R^2 value of 0.19 is considered weak, 0.33 is considered moderate, and 0.67 is considered strong. These thresholds help in assessing the strength of the relationship between the constructs within the model, providing insight into how well the exogenous variables explain the variance in the endogenous construct. A higher R^2 value signifies a greater explanatory power of the exogenous variables on the endogenous variable, indicating a more robust model.

Table 6 **R-square value**

	R-square	**R-square adjusted**
FP	0.485	0.477

Table 6 reveals that the R-square (R^2) value of the endogenous variable is 0.485, indicating a moderate level of explanatory power. This result implies that the exogenous variables in the model collectively account for 48.5% of the variation in the endogenous variable. In other words, nearly half of the changes in the dependent variable can be explained by the independent variables included in the study. The remaining 51.5% of the variation is attributable to other factors not considered within this model, suggesting that there are additional variables or influences outside the scope of the current study that impact the dependent variable. This moderate R^2 value highlights the importance of the exogenous variables while also indicating the potential for further research to identify and incorporate other relevant factors.

Effect size f-square analysis

The effect size is a statistical procedure that assesses the significance of one or more exogenous constructs on an endogenous construct by recalculating the R^2 value. It quantifies the magnitude of the relationship between the latent variables, offering insights into how much an independent variable contributes to explaining the variance in a dependent variable. By doing so, the effect size helps determine the practical importance of the exogenous constructs in influencing the endogenous construct. This procedure is crucial for understanding not just whether relationships exist, but how substantial those relationships are, thereby providing a more nuanced view of the dynamics within the model.

Table 7 **Effect size f^2**

	f-square
BF -> FP	0.070
BME -> FP	0.201
FT -> FP	0.020
FT x BF -> FP	0.055
FT x BME -> FP	0.000

The effect size quantifies the extent to which the exogenous latent variables contribute to the R^2 value of the endogenous latent variable, providing a measure of their practical impact (Fawad, 2022). According to Cohen's criteria, an f-square value of 0.35 signifies a high impact, 0.15 a moderate impact, and 0.02 a weak impact (as cited in Fawad, 2022). Table 7 displays the f-square values for the study's constructs: the effect size of Budget Funding (BF) on Financial Performance (FP) is 0.070, indicating a weak impact; the effect size of Budget Monitoring and Evaluation (BME) on FP is 0.201, suggesting a moderate impact; Financial Technology (FT) on FP has an f-square value of 0.020, reflecting a weak impact; and the interaction term FT x Budget Funding (BF) on FP shows an f-square value of 0.055, also indicating a weak impact. Conversely, the interaction term FT x BME on FP has an f-square value of 0.000, which is negligible, indicating no significant effect.

Predictive relevance Q^2 analysis

Table 8 **LV Prediction summary**

	Q^2predict	RMSE	MAE
FP	0.447	0.754	0.590

Hair, Hult, Ringle, Sarstedt, and Thiele (2017) explain that predictive relevance, measured by the Q^2 statistic, assesses how well the model can predict the endogenous variable. In this study, the Q^2 value for the endogenous variable, Financial Performance, was significantly greater than zero, specifically $Q^2 = 0.447$, indicating a strong degree of predictive relevance. This suggests that the model has substantial predictive power for the endogenous construct. According to Chin (as cited in Fauzi, 2022), for reflective models, a Q^2 value of 0.02 indicates weak predictive relevance, 0.15 represents moderate relevance, and 0.35 reflects strong predictive relevance. Given the Q^2 value of 0.447 in this study, the endogenous variable demonstrates a high level of predictive relevance, underscoring the model's effectiveness in forecasting outcomes related to Financial performance.

Bootstrapping Procedure:

To test the study hypotheses, a bootstrapping procedure with 5000 resamples was employed, providing a robust method for estimating the precision of the path coefficients. Table 9 presents the results of the bootstrapping analysis, which are used to evaluate the significance of the hypothesized relationships. According to the decision rule, a variable is considered to have a significant effect if the t-statistic value is greater than 1.96 and the p-value is less than 0.05. These thresholds indicate that the effect is statistically significant at the 5% level, meaning that there is a high likelihood that the observed effects are not due to random chance. This approach ensures the reliability of the results and supports the validity of the hypotheses tested in the study.

TEST OF HYPOTHESIS

Table 9 **Path coefficient estimate**

	Co-efficient	Standard Error (SE)	T statistics	P values
BF -> FP	0.220	0.045	4.837	0.000
BME -> FP	0.407	0.053	7.639	0.000
FT -> FP	0.134	0.059	2.262	0.024

FT x BF -> FP	-0.177	0.047	3.790	0.000
FT x BME -> FP	-0.004	0.050	0.074	0.941

The findings presented in Table 9 demonstrate that Budget Funding plays a crucial role in enhancing the financial performance of revenue-generating institutions in Niger State. With a coefficient of 0.220, the analysis indicates that a one-unit increase in Budget Funding corresponds to a 0.220-unit improvement in financial performance, underscoring the positive relationship between these two variables. The t-statistic of 4.837, which surpasses the critical threshold of 1.96, along with a p-value of 0.000, affirms the statistical significance of this relationship, eliminating the possibility that the observed effect is due to random chance. By rejecting the null hypothesis, the study supports the alternate hypothesis, validating that adequate budgetary allocations are integral to the financial success of these institutions. This finding aligns with the work of Ekaru Moses (2022), reinforcing the broader understanding that effective budget funding is essential for optimizing financial outcomes in public sector entities. The implications of this result suggest that policymakers and financial managers should prioritize sufficient and timely budget allocations to ensure the sustained financial health and operational efficiency of revenue-generating institutions in Niger State.

The findings from Table 9 highlight the significant influence of budget monitoring and evaluation on the financial performance of revenue-generating institutions in Niger State. With a coefficient of 0.407, the data suggests that for every one-unit increase in budget monitoring and evaluation, there is a corresponding 0.407-unit improvement in financial performance. The t-statistic of 7.639, which far exceeds the critical value of 1.96, alongside a p-value of 0.000, confirms that this effect is statistically significant and unlikely to be due to chance. This strong relationship underscores the importance of rigorous monitoring and evaluation processes in ensuring that budgetary allocations are effectively utilized to achieve desired financial outcomes. The study's rejection of the null hypothesis and acceptance of the alternate hypothesis further validates this critical role. These findings are consistent with the research of Ngacha and McDonald (2023) and Tirtosudarmo, Wardoyo, and Kuncoro (2022), though they slightly differ from the work of Panyako and Miroga (2024) and stand in complete contrast to the findings of Ezekiel and Obafemi. The implications of these results suggest that institutions should invest in robust monitoring and evaluation frameworks to enhance financial performance. Policymakers and financial managers in Niger State must recognize that effective oversight mechanisms are not just beneficial but essential for optimizing the financial efficiency and sustainability of public sector institutions.

The moderation analysis in Table 9 reveals that Financial Technology (FT) significantly influences the relationship between Budget Funding (BF) and Financial Performance (FP) of revenue-generating institutions in Niger State. The interaction term's coefficient of -0.177 indicates that the presence of Financial Technology moderates this relationship by weakening the positive impact of Budget Funding on Financial Performance. In other words, while Budget Funding generally enhances financial performance, the introduction of Financial Technology slightly diminishes this effect. The t-statistic of 3.790, which surpasses the critical threshold of 1.96, and the p-value of 0.000 confirm that this moderating effect is statistically significant and not due to random variation. Consequently, the study rejects the null hypothesis and accepts the alternate hypothesis, affirming that Financial Technology plays a crucial moderating role in this relationship. The implications of these findings are multifaceted: they suggest that while Financial Technology can introduce efficiencies and innovations in financial management, it may also introduce complexities or constraints that reduce the direct benefits of increased budget funding. This justifies the inclusion of Financial Technology as a moderating variable

in the study and suggests that policymakers and financial managers should carefully consider how technological interventions are integrated into budgetary processes to optimize their impact on financial performance.

The moderation results presented in Table 9 indicate that Financial Technology (FT) does not significantly moderate the relationship between Budget Monitoring and Evaluation (BME) and Financial Performance (FP) in revenue-generating institutions in Niger State. The interaction term's coefficient of -0.004 is nearly zero, suggesting that Financial Technology has an almost negligible effect on this relationship. Additionally, the t-statistic of 0.074, which is far below the critical value of 1.96, and the p-value of 0.941, which is significantly higher than the 0.05 significance level, further confirm that this effect is not statistically significant. As a result, the study accepts the null hypothesis and rejects the alternate hypothesis, indicating that Financial Technology does not meaningfully influence how Budget Monitoring and Evaluation impacts Financial Performance. The implications of this finding suggest that while Financial Technology may have other roles within financial processes, it does not significantly alter the effectiveness of budget monitoring and evaluation practices in driving financial performance. This could imply that the benefits of monitoring and evaluation are robust and effective regardless of the level of technological integration, or that the specific technologies in use do not interact strongly with these processes. Policymakers and financial managers may need to consider other factors or variables if they seek to enhance the impact of Budget Monitoring and Evaluation on financial performance through technological means.

Conclusion

In conclusion, this study effectively explored the impact of exogenous latent variables on the financial performance of revenue-generating institutions in Niger State. Through rigorous analysis, including Confirmatory Factor Analysis (CFA), reliability and validity tests, and bootstrapping procedures, the study demonstrated that Budget Funding has a significant positive effect on financial performance. Additionally, it was found that Financial Technology significantly moderates the relationship between Budget Funding and Financial Performance, enhancing the impact of funding on performance outcomes. However, Financial Technology did not moderate the relationship between Budget Monitoring and Evaluation and Financial Performance.

Recommendation

Based on the study's findings, several key recommendations are advanced for various stakeholders involved in budget management and financial performance enhancement in revenue-generating institutions. Policymakers should advocate for the integration of FinTech in budget management to enhance efficiency, transparency, and financial performance. This can be achieved by promoting policies that incentivize FinTech adoption, supporting digital infrastructure, and ensuring regulatory frameworks encourage innovation. Additionally, guidelines should focus on optimizing FinTech tools, such as automated budgeting software, to improve budgetary control and ensure expenditures align with allocated budgets.

The study highlights the need for significant investments in advanced FinTech solutions to enhance budgetary control, improve financial forecasting, and achieve better outcomes. Institutions should adopt innovative financial practices, enabling better data management, real-time tracking, and more effective decision-making. Predictive analytics can identify potential financial issues early, promoting proactive management. This approach is crucial for improving financial stability, efficiency, and transparency, ensuring institutions meet fiscal goals and deliver essential public services. Financial managers, who are directly responsible for the day-to-day financial operations of these institutions, must take an active role in incorporating FinTech tools into their budgeting and performance management strategies. Continuous

training and professional development in the use of these technologies are vital to ensure that financial managers are equipped with the necessary skills to fully utilize FinTech solutions. This proactive approach can help them to streamline financial processes, reduce errors, and increase the accuracy of financial reporting. Additionally, by staying updated on the latest advancements in FinTech, financial managers can better align their strategies with emerging trends and practices, thereby optimizing financial performance. Technology providers have a pivotal role in developing and offering FinTech solutions that are specifically tailored to the unique needs of revenue-generating institutions. These solutions should include features that support effective budget tracking, analysis, and reporting, enabling institutions to achieve greater financial control and oversight. Providers should also consider collaborating with these institutions to understand their specific challenges and requirements, ensuring that the technology they offer is both relevant and user-friendly.

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